Back to Basics: Focusing on Fundamental Physician Views of Clinical Data

Douglas E. Dietzman, Project Manager
Oren W. Mason, M.D., Advantage Health
Saint Mary's Health Services, Grand Rapids, Michigan

Background. In early 1996, Saint Mary's Health Services (SMHS), an integrated community health care system, launched a project to develop a patient-focused, physician-oriented clinical information retrieval system. The purpose of this Clinical Workstation was to replace their aging Physician Office Network (PON) system and deliver patient data to the various clinical areas throughout the health system in a manner more consistent with their information viewing needs. The PON system delivered hospital-based laboratory, transcribed reports, and registration information organized around encounters, not patients. In addition, the out-dated Wang transcription and laboratory systems that co-existed with the PON were being replaced by new systems - driving the need for a new means of communicating the information to clinicians.

This new means of communicating and viewing information introduced the challenge of presenting similar information to different user communities, including physicians, nurses, residents, administrative staff, case managers, and quality assurance managers. In addition, the differing information and functional requirements between internal hospital users and external physician office, nursing home, and home health users needed to be addressed within the context of patient confidentiality and security. These challenges needed to be resolved and a system developed very quickly to support the migration to the new transaction systems and respond to local marketplace pressures.

System. The Clinical Workstation application design was facilitated through a number of joint application design sessions with cross-functional teams of individuals from throughout the health system. These teams included physicians, nurses, health system administrators, information systems personnel, department representatives, and physician office staff.

Based on Health Level 7 (HL7) standards, the Clinical Workstation is a graphically designed, client/server application which delivers resulted, ordered, and pending laboratory data, several laboratory flowsheets *(e.g., renal and liver)*, transcribed medical reports (*e.g., radiology, pathology, surgical, emergency, cardiology, consults*), as well as patient demographic and encounter information. All of this information is presented in a patient-centered chart metaphor. The system is also comprised of a number of physician-focused functions, including: (i) patient and census searches by patient, nursing station, physician, or physician group, (ii) e-mail with the ability to attach a chart to the message, (iii) what's new, which identifies the new results entering the system across a provider's population of patients, (iv) my list, which allows any user to build and maintain their own list of patients for monitoring, (v) physician and location telephone directories, (vi) procedure instructions for clinicians and patients, (vii) a system-wide bulletin board, (viii) customization options to allow the individual users to configure the system based on their preferences.

Evaluation. The practical impact of this new system guided the design and development processes, was assessed through a pilot implementation period, and has been continually evaluated through production rollout. The results have been dramatic across a number of areas within the health system. The ability for physicians to manage clinical information across their patient population has greatly enhanced their efficiency and satisfaction with information systems. Information is available where and when it is needed, reducing the time waiting for information from the physical chart to be located, sent, copied, and/or faxed. Physician office personnel have been especially pleased with their views as it greatly speeds their billing and collection activities. Communication between caregivers has improved as chart information can be forwarded for review and coverage situations are accomodated within the group functions. Overall, physician use of information systems has increased due to the improved access to and organization of patient information.

Conclusions. Achieving clinical integration at the physician desktop within a health care system can be accomplished by focusing on the basic business requirements (as defined by the users), embracing care givers and other users from across the health system as the key knowledge sources and change agents, and delivering a reliable application tool within the context of the varying business environments. Fundamental in the successful design of these tools is a focus on the basics: supporting the clinician and their need for reliable and practical views of clinical information. Any technology that ignores this fundamental truth will fail.

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